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EXAMINER	
HUBER, JEREMIAH C	

ART UNIT	PAPER NUMBER
2621	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/620,320	TOURAPIS ET AL.	
	Examiner	Art Unit	
	Jeremiah C. Huber	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-64 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-24 and 26-64 is/are rejected.

7)☒ Claim(s) 25 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 15 July 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 19-20 and 52-53 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 19 and 52 recite "a size of said collocated portion is one unit of motion vector value". Support for this limitation could not be found within the specification.

Claims 20 and 53, which depend from claims 19 and 52 respectively further recite "one unit of motion vector value is one quarter-sample unit in as used in encoding said reference picture of said collocated portion". Support for this limitation could not be found within the specification either.

The claims will be treated as best understood by the examiner.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 64 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim is directed to a

"a propagated signal carrying encoded video data that includes at least one encoded current portion of a current video within a sequence of video pictures that is encoded based on at least one motion vector predictor (MVP) associated with said

current portion, said MVP comprising data associated with at least a first reference picture within said sequence of video pictures and also with at least one other encoded portion of said current video picture, and wherein said MVP is not based on a temporal interpolation of motion vectors used for encoding said first reference picture."

However, the claim merely states an arrangement of data stored on a computer readable medium, it does not produce a tangible result and is therefore not statutory.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-18, 22, 27-36, 38-51, 54-59 and 61-64 are rejected under 35 U.S.C. 102(e) as being anticipated by Kondo et al (20040146109).

In regard to claim 1 Kondo discloses a method for use in encoding video data (Kondo figs 17-35 and pars. 178-251, and 299-341) including, dividing the current video picture into portions and selecting a current portion to be encoded (Kondo figs. 26-29 BL1 and pars. 205 and 207), establishing at least a first reference picture for the current portion, selectively assigning at least one motion vector predictor (MVP) to the current portion, the MVP including data associated with the first reference picture and with at

least one other encoded portion of the current video picture, wherein the MVP is not based on a temporal interpolation of motion vectors used for encoding the first reference picture (Kondo figs. 26-29 and pars. 205-207 especially par. 207)

In regard to claim 2 refer to the statements made in the rejection of claim 1 in section 3 above. Kondo further discloses establishing a second reference picture for the current portion, wherein the MVP further includes data associated with the second reference picture and the MVP is also not based on a temporal interpolation of motion vectors used for encoding the second reference picture (Kondo par. 207).

In regard to claims 3-7 refer to the statements made in the rejection of claims 1 and 2 in section 3 above. Kondo further discloses that the first and second reference picture can each temporally precede or temporally follow the current picture (Kondo fig. 31), both temporally precede or temporally follow the current picture (Kondo figs. 27 and 29), or each temporally precede or temporally follow each other (Kondo figs 27, 29 and 31 and par. 98).

In regard to claim 8 refer to the statements made in the rejection of claim 1 in section 3 above. Kondo further discloses that the video sequence can be encoded in interlaced mode (Kondo par. 302).

In regard to claim 9 refer to the statements made in the rejection of claim 1 in section 3 above. Kondo further discloses that the other encoded portion of the current video picture is a spatially neighboring portion (Kondo figs. 26-29 note A, B, C spatially neighbor BL1).

In regard to claim 10 refer to the statements made in the rejection of claim 2 in section 3 above. Kondo further discloses selectively assigning a motion parameter using spatial prediction (Kondo pars. 205-207), and by 'using' at least one 'collocated' portion within at least one of the first and second reference pictures (Kondo figs. 26-29 and pars 192 and 205-207).

In regard to claim 11 refer to the statements made in the rejection of claim 10 in section 3 above. Kondo further discloses that the collocated portion is intra coded (Kondo par. 192).

In regard to claim 12 refer to the statements made in the rejection of claim 10 in section 3 above. Kondo further discloses that the collocated portion can be encoded based on a different reference picture than the current portion (Kondo fig. 19 and par. 179).

In regard to claim 13 refer to the statements made in the rejection of claim 10 in section 3 above. Kondo further discloses that the MVP is based on at least one motion parameter of at least one portion adjacent to the current portion within the video picture (Kondo figs 26-29 and pars 205-207).

In regard to claim 14 refer to the statements made in the rejection of claim 10 in section 3 above. Kondo further discloses that the MVP is used without alteration to form the motion parameter of at least one sample in a corresponding current video frame (Kondo pars. 205-207)

In regard to claim 15 refer to the statements made in the rejection of claim 10 in section 3 above. Kondo further discloses that the MVP is used without alteration to form the motion parameter of at least one sample in a corresponding current video field (Kondo par 316).

In regard to claims 16 and 17 refer to the statements made in the rejection of claims 10, 14 and 15 in section 3 above. Kondo further discloses the use of a coded motion vector difference (Kondo par. 341, note 'coded predictive error').

In regard to claim 18 refer to the statements made in the rejection of claim 13 in section 3 above. Kondo further discloses setting a motion vector to zero when the collocated portion is substantially temporally stationary (Kondo fig. 7 and par. 108 and eqs. 2&3, note: When MB22 is stationary MV21 and MV22 are zero, therefore MV23 and MV24 will be zero).

In regard to claim 22 refer to the statements made in the rejection of claim 1 in section 3 above. Kondo further discloses encoding a current portion using a "Copy Mode" scheme based on a spatial prediction technique (Kondo pars. 205-207), encoding the current portion using a "Direct Mode" scheme resulting in a "Direct Mode" coded current portion (Kondo pars 6-8 and 108-109), and selecting between Copy Mode and Direct Mode (Kondo par. 192).

In regard to claim 27 refer to the statements made in the rejection of claim 10 in section 3 above. Kondo further discloses that the MVP can be based on linear prediction. (Kondo par. 246, note an average is a linear function).

In regard to claim 28-29 refer to the statements made in the rejection of claim 10 in section 3 above. Kondo further discloses that the MVP can be based on median prediction. (Kondo par. 205 note a median is a non-linear function).

In regard to claim 30 refer to the statements made in the rejection of claim 10 in section 3 above. Kondo further discloses the use of "Direct Mode" motion parameters (Kondo pars 6-8 and 108-109).

In regard to claim 31 refer to the statements made in the rejection of claim 1 in section 3 above. Kondo further discloses that the current portion can be a block (Kondo par. 194 and 205)

In regard to claim 32 refer to the statements made in the rejection of claim 1 in section 3 above. Kondo further discloses encoding B pictures (Kondo par. 94, and fig. 3A).

In regard to claim 33 refer to the statements made in the rejection of claim 2 in section 3 above. Kondo further discloses that first and second reference pictures can be P pictures (Kondo fig. 3A).

In regard to claim 34 refer to the statements made in the rejection of claim 1 in section 3 above. Kondo further discloses syntax associated with the current picture that identifies that the current picture was encoded using the MVP (Kondo fig. 5 and pars. 98 and 341, note PredType).

In regard to claim 35 refer to the statements made in the rejection of claim 1 in section 3 above. Kondo further discloses a "direct_mv_spatial" parameter (Kondo par. 341 note PredType indicates spatial prediction in the direct mode).

In regard to claim 36 refer to the statements made in the rejection of claim 34 in section 3 above. Kondo further discloses the use of a frame header (Kondo Fig. 5).

In regard to claim 38 refer to the statements made in the rejection of claim 36 in section 3 above. Kondo further discloses the use of a spatial direct mode (Kondo par. 341) and a temporal direct mode (Kondo pars 6-8 and 108-109).

In regard to claims 39-40 refer to the statements made in the rejection of claim 1 in section 3 above.

In regard to claims 41-51, 54-59 and 61-64 refer to the statements made in the rejection of claims 1-18, 22, 27-36, 38-40 in section 3 above. Kondo further discloses decoding (Kondo fig. 51).

4. Claims 1, 8-9, 30-32, 34-41, 44, 55 and 57-64 are rejected under 35 U.S.C. 102(e) as being anticipated by Eifrig et al (6005980).

In regard to claim 1 Eifrig discloses a video encoding method that includes selecting a current video picture to be encoded, dividing the current video picture into portions and selecting a current portion to be encoded picture (Eifrig fig. 7, col. 13 line 11 to line 61), establishing at least a first reference picture for the current portion, selectively assigning at least one motion vector predictor (MVP) to the current portion, the MVP including data associated with the first reference picture and with at least one other encoded portion of the current video picture, wherein the MVP is not based on a temporal interpolation of motion vectors used for encoding the first reference picture (Eifrig fig. 7, col. 13 line 62 to col. 14 line 33, note a motion vector is data 'associated' with a first reference picture).

In regard to claim 8 refer to the statements made in the rejection of claim 1 in section 4 above. Eifrig further discloses the use of interlaced pictures (Eifrig figs 7-9).

In regard to claim 9 refer to the statements made in the rejection of claim 1 in section 4 above. Eifrig further discloses that the other encoded portion is a spatially neighboring portion to the current portion within the current picture (Eifrig figs. 7-9).

In regard to claim 30 refer to the statements made in the rejection of claim 1 in section 4 above. Eifrig further discloses the use of "Direct Mode" motion parameters (Eifrig col. 7 lines 9-15).

In regard to claim 31 refer to the statements made in the rejection of claim 1 in section 4 above. Eifrig further discloses that the current portion can be a macroblock (Eifrig figs. 7-9 and col. 13 lines 11 and 41).

In regard to claim 32 refer to the statements made in the rejection of claim 1 in section 4 above. Eifrig further discloses encoding P pictures (Eifrig col. 13 line 14).

In regard to claim 34 refer to the statements made in the rejection of claim 1 in section 4 above. Eifrig further discloses a syntax associated with the current picture that identifies that the current picture was encoded using an MVP (Eifrig fig. 14 'MVD_sh').

In regard to claim 35 refer to the statements made in the rejection of claim 1 in section 4 above. Eifrig further discloses a "direct" spatial encoding mode (Eifrig col. 13 line 11 to column 14 line 33).

In regard to claim 36 refer to the statements made in the rejection of claim 34 in section 4 above. Eifrig further discloses that syntax includes a macroblock header (Eifrig fig. 14 and col. 19 lines 54-64).

In regard to claim 37 refer to the statements made in the rejection of claim 36 in section 4 above. Eifrig further discloses at least one flag indicative of a type of mode encoding used (Eifrig fig 14 AC_pred_flag).

In regard to claim 38 refer to the statements made in the rejection of claim 36 in section 4 above. Eifrig further discloses a direct temporal mode (Eifrig col. 7 lines 9-15).

In regard to claims 39-40 refer to the statements made in the rejection of claim 1 in section 4 above.

In regard to claims 41 and 62-64 refer to the statements made in the rejection of claim 1 in section 4 above. Eifrig further discloses decoding (Eifrig fig. 13).

In regard to claims 44 and 55 refer to the statements made in the rejection of claims 9 and 32 respectively in section 4 above.

In regard to claims 57-59 and 61 refer to the statements made in the rejection of claims 34-36, 38 and 41 in section 4 above.

In regard to claim 60 refer to the statements made in the rejection of claims 37 and 59 in section 4 above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 19-20 and 52-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo in view of Uenoyama et al (6798837).

In regard to claim 19 refer to the statements made in the rejection of claim 13 in section 3 above. It is noted that Kondo does not disclose details of motion vector units. However Uenoyama discloses a video coding method and apparatus in which motion vectors are scaled according to the picture size so that the motion vector unit has meaning relative to the current size of the picture (Uenoyama col. 13 lines 5-14). It is therefore considered obvious that one of ordinary skill in the art would recognize the advantage of including motion vector scaling as taught by Uenoyama in the invention of Kondo in order to adapt to changes in output resolution.

In regard to claim 20 refer to the statements made in the rejection of claim 19 in section 5 above. Kondo further discloses the use of quarter pixel precision motion vectors (Kondo pars 13, 125, 163 and 176).

In regard to claims 52-53 refer to the statements made in the rejection of claims 19-20 and 51 in sections 3 and 5 above.

6. Claim 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo in view of Park et al (6973257).

In regard to claim 21 refer to the statements made in the rejection of claim 1 in section 3 above. Kondo discloses encoding the current portion using a "Direct Mode" scheme resulting in a "Direct Mode" coded current portion (Kondo pars 6-8 and 108-109). It is noted that Kondo does not disclose details related to a Skip mode. However, Park discloses a compression method which can use a Skip (Park 'coded' col. 10) mode, and further selects the Skip mode over other modes of compression (Park fig. 6). It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of include a Skip mode with selection process as taught by Park in the invention of Kondo in order to allow greater flexibility in compression schemes.

7. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo in view of Jacquin et al (6167162).

In regard to claims 23-24 refer to the statements made in the rejection of claim 22 in section 3 above. It is noted that Kondo does not disclose details of a Rate Distortion Optimization selection technique. However, Jacquin discloses a Rate Distortion Optimization coding mode selection method in which the coding method and quantization parameter are selected to minimize distortion for a target bit-rate, the method of Jacquin also uses a Lagrangian multiplier (Jacquin col. 2 lines 34-66). It is therefore considered obvious that one of ordinary skill in the art would recognize the

advantage of including a mode selecting method as taught by Jacquin in the invention of Kondo in order to provide improvements in rate control and picture quality.

8. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo in view of Jacquin as applied to claim 23 in section 7 above, and further in view of Hui (6654417)

It is noted that neither Kondo nor Jacquin discloses details of user input. However, Hui discloses an encoding system in which a user defines the target bit-rate. It is therefore considered obvious that one of ordinary skill in the art a the time of the invention would recognize the advantage of further modifying the invention of Kondo in view of Jacquin to include a user defined target bit-rate as taught by Hui in order to allow a user to adapt the encoding process as desired.

9. Claims 37 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo.

In regard to claim 37 refer to the statements made in the rejection of claim 36 in section 3 above. It is noted that Kondo does not disclose details of prediction type syntax structure. However, examiner takes official notice that the use of flags in video syntax was common and notoriously well known in the art at the time of the invention. It is therefore considered obvious that one of ordinary skill in the art would recognize the advantage of using flags as was well known in the art to differentiate types of direct mode coding as taught by Kondo. One would further expect Kondo to include flags

because Kondo describes a syntax item that differentiates coding modes (Kondo par. 341).

In regard to claim 60 refer to the statements made in the rejection of claims 37 and 59 in sections 8 and 3 above.

10. Claims 2-7, 10-18, 27-29, 33, 42-43, 45-51, 54, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eifrig in view of Wiegand et al (6807231).

In regard to claims 2-7 refer to the statements made in the rejection of claim 1 in section 4 above. It is noted that Eifrig does not disclose the use of a second reference frame. However, Wiegand discloses an MVP that references multiple frames that can either precede or follow the current reference frame and either precede or follow each other (Wiegand fig. 2B&C). It is therefore considered obvious that one of ordinary skill in the art would recognize the advantage of including a multi reference MVP as taught by Wiegand in the invention of Eifrig in order to improve coding efficiency.

In regard to claim 10 refer to the statements made in the rejection of claim 2 in section 10 above. Eifrig further discloses spatial prediction (Eifrig figs. 7-9 and col. 13 line 11 to column 14 line 33)

In regard to claim 11 refer to the statements made in the rejection of claim 10 in section 10 above. Eifrig further discloses that frames can be predicted from anchor frames, in which macroblocks can be intra coded (Eifrig col. 6 lines 36-45).

In regard to claim 12 refer to the statements made in the rejection of claim 10 in section 10 above. Eifrig further discloses that frames can be predicted from anchor frames, in which macroblocks can be inter coded with respect to a temporally subsequent frame (Eifrig col. 6 lines 36-45).

In regard to claim 13 refer to the statements made in the rejection of claim 10 in section 10 above. Eifrig further discloses that the MVP is based on at least one motion parameter of at least one portion adjacent to the current portion within the video picture (Eifrig figs. 7-9 and col. 13 line 11 to column 14 line 33).

In regard to claim 14 refer to the statements made in the rejection of claim 10 in section 10 above. Eifrig discloses that the MVP can be used without alteration to form the motion parameter of at least one sample in a corresponding current video frame (Eifrig col. 15 lines 43-62).

In regard to claim 15 refer to the statements made in the rejection of claim 10 in section 10 above. Eifrig further discloses that the MVP is used without alteration to form the motion parameter of at least one sample in a corresponding current video field (Eifrig col. 14 line 4-15).

In regard to claims 16 and 17 refer to the statements made in the rejection of claims 10, 14 and 15 in section 10 above. Eifrig further discloses the use of a coded motion vector difference (Eifrig col. 14 lines 29-33).

In regard to claim 18 refer to the statements made in the rejection of claim 13 in section 10 above. Eifrig further discloses a direct mode prediction method in which motion vectors for a current block are linearly scaled from a reference block (Eifrig col. 7 lines 9-15). It is therefore inherent that if the reference block is substantially temporally stationary (has a motion vector of zero) that the linearly scaled motion vector will also be zero.

In regard to claim 27 refer to the statements made in the rejection of claim 10 in section 10 above. Eifrig further discloses that the MVP can be based on linear prediction. (Eifrig col. 14 lines 16-20, note an average is a linear function).

In regard to claim 28-29 refer to the statements made in the rejection of claim 10 in section 10 above. Eifrig further discloses that the MVP can be based on median prediction. (Eifrig col. 14 lines 4-15, note a median is a non-linear function).

In regard to claim 33 refer to the statements made in the rejection of claim 2 in section 10 above. Eifrig further discloses that first and second reference pictures can be P pictures (Eifrig col. 6 lines 36-45).

In regard to claims 42-43, 45-51, 54, and 56 refer to the statements made in the rejection of claims 2-7, 10-15, 17-18 and 33 in section 10 above and claims 21-24 in sections 12-13 below.

11. Claims 19-20 and 52-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eifrig in view of Wiegand as applied to claim 18 above, and further in view of Uenoyama.

In regard to claim 19 refer to the statements made in the rejection of claim 13 in section 10 above. It is noted neither Eifrig nor Wiegand disclose details of motion vector units. However Uenoyama discloses a video coding method and apparatus in which motion vectors are scaled according to the picture size so that the motion vector unit has meaning relative to the current size of the picture (Uenoyama col. 13 lines 5-14). It is therefore considered obvious that one of ordinary skill in the art would recognize the advantage of including motion vector scaling as taught by Uenoyama in the invention of Eifrig in view of Wiegand in order to adapt to changes in output resolution.

In regard to claim 20 refer to the statements made in the rejection of claim 19 in section 11 above. Eifrig further discloses quarter pixel precision motion vectors (Eifrig col. 9 lines 16-18).

In regard to claims 52-53 refer to the statements made in the rejection of claims 19-20 and 51 in sections 10 and 11 above.

12. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eifrig in view of Park.

In regard to claim 21 refer to the statements made in the rejection of claim 1 in section 4 above. Eifrig discloses encoding the current portion using a "Direct Mode" scheme resulting in a "Direct Mode" coded current portion (Eifrig col. 7 lines 9-15). It is noted that Eifrig does not disclose details related to a Skip mode. However, Park discloses a compression method which can use a Skip (Park 'coded' col. 10) mode, and further selects the Skip mode over other modes of compression (Park fig. 6). It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of include a Skip mode with selection process as taught by Park in the invention of Eifrig in order to allow greater flexibility in compression schemes.

13. Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eifrig in view of Jacquin et al.

In regard to claims 22-24 refer to the statements made in the rejection of claim 1 in section 4 above. Eifrig further discloses encoding a current portion using a "Copy Mode" scheme based on a spatial prediction technique (Eifrig figs. 7-9 and col. 7 line 11 to col. 14 line 33), encoding the current portion using a "Direct Mode" scheme resulting in a "Direct Mode" coded current portion (Eifrig col. 7 lines 9-15). It is noted that Eifrig does not disclose details about deciding between encoding modes. However, Jacquin discloses a Rate Distortion Optimization coding mode selection method in which the

coding mode and quantization parameter are selected to minimize distortion for a target bit-rate, the method of Jacquin also uses a Lagrangian multiplier (Jacquin col. 2 lines 34-66). It is therefore considered obvious that one of ordinary skill in the art would recognize the advantage of including a mode selecting method as taught by Jacquin in the invention of Eifrig in order to provide improvements in rate control and picture quality.

14. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eifrig in view of Jacquin as applied to claim 23 in section 13 above, and further in view of Hui.

It is noted that neither Eifrig nor Jacquin discloses details of user input. However, Hui discloses an encoding system in which a user defines the target bit-rate.
It is therefore considered obvious that one of ordinary skill in the art a the time of the invention would recognize the advantage of further modifying the invention of Eifrig in view of Jacquin to include a user defined target bit-rate as taught by Hui in order to allow a user to adapt the encoding process as desired.

Allowable Subject Matter

Claim 25 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 25 recites the formula:

$$f(QP) = \max\left(2, \min(4, \frac{QP}{6})\right) .$$

as an adaptive weighting function for rate distortion optimization.

The closest pieces of prior art are Kondo in view of Jacquin and Eifrig in view of Jacquin neither of which discloses this particular formula as an adaptive weighting function for rate distortion optimization.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremiah C. Huber whose telephone number is (571)272-5248. The examiner can normally be reached on Mon-Fri 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeremiah C Huber
Examiner
Art Unit 2621

YOUNG LEE
PRIMARY EXAMINER